

Vol. 41

Friday, 17 May 1963

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MEDICAL NEWS LETTER

Vol. 41

Friday, 17 May 1963

No. 10

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

Radioisotopes in Tropical Medicine (Continued)

WHO Chronicle, Vol. 17, No. 3, March 1963.

Water and Electrolyte Metabolism (cont'd)

Measurements of individual electrolytes are of only limited value; more recent work has been concerned with simultaneous studies of several isotopes to outline their mutual relationships. It is now possible to measure simultaneously total body water, extracellular fluid, plasma volume, and exchangeable sodium, potassium, and chloride with scarcely less accuracy than when they are measured separately.

The hormonal control of water balance has recently become the center of much interest, particularly in relation to the actions of aldosterone and the pituitary antidiuretic factor. The shifts of body fluid from one compartment to another occurring in malaria or after heavy sweating may be associated with increased aldosterone secretion and sodium retention. It is obvious that this hormonal control is extremely complex, although some elucidation may be possible through the use of tritium and sodium and potassium isotopes. Although loss of water and salts from the bowel is so important in all forms of enteritis, and in nutritional disorders, such as kwashiorkor or sprue, conventional clinical estimations of serum levels of sodium, potassium, and chloride may provide little useful quantitative information. In infants with severe malnutrition, serum potassium levels may not suggest any depletion, although isotope dilution technics indicate that a 30% reduction of total exchangeable potassium has already occurred. Similarly, plasma sodium estimations—however carefully conducted—may be a poor guide to total sodium losses since normal blood levels may be maintained by mobilization of cell sodium even when much of the mineral has already been lost to the body as a whole. Plasma sodium levels are rarely greatly reduced despite gross depletion of body salt, although the values for whole-blood sodium may be low because when such depletion occurs the red cells give up most of the sodium they contain.

Nutrition (4)

In many types of malnutrition the chief problem is effective application of existing knowledge, as in prevention of beriberi due to thiamine deficiency. The final elucidation of the remaining metabolic problems is not of immediate relevance. Clinical signs of malnutrition are commonly accompanied by those of infective disease, especially diarrhea in infants; infection must be regarded as an essential part of many disorders conventionally ascribed to malnutrition. Surveys in tropical countries reveal a high incidence of infection and infestation; in some areas the presence of intestinal worms is almost universal. Parasites affect the nutrition of the host by competing for food and inhibiting

absorption: in its turn the host's nutritional state affects his resistance to the parasites and their ability to flourish.

Much nutritional research is concerned with the chemical nature of food before ingestion. More emphasis, however, should be placed on the chemical and physical composition of contents of the bowel along its length, for this is the starting point of the chain of metabolic events on which life depends. It may determine the function and permeability of the intestinal barrier itself and the extinction or survival of parasites and microorganisms. The bowel contents are so complex in their composition, origin, and fate that it is probably impossible to study them satisfactorily without the use of radioisotope technics. Certain phenomena, e. g., the outward passage of protein and fat into the bowel lumen, are demonstrable only by such technics; this may be true also with regard to important trace elements, such as molybdenum and selenium present in foods and body tissues in quantities too small to be measured in other ways.

Protein Metabolism (5)

Isotopes can be used in the investigation of protein metabolism for two main purposes: the measurement of pool sizes by dilution and the study of dynamic exchanges, the latter method being supplementary to and relying on information derived from the former. Data so obtained help toward classification of the body's protein as mobile or fixed in a metabolic sense. Pool sizes of protein can be compared in normal and undernourished persons and, in the latter, from one stage to another of their recovery under treatment. Rates of protein synthesis and breakdown can be measured using labeled amino acids; for instance, in protein depleted children, using ^{35}S -methionine, it can be shown that the proportion incorporated into total plasma proteins is much greater at the beginning than at the end of treatment. A similarly increased uptake is demonstrable in burned patients suffering from a different kind of protein depletion.

After its administration, labeled amino acid rapidly becomes involved in protein synthesis and breakdown in cells all over the body. Tagged molecules are first transported via plasma and extravascular water and become progressively diluted with similar unlabeled amino acids on their way to the cells. Within minutes of their arrival, radioactivity begins to be incorporated into all kinds of intracellular protein: collagenous, nuclear, and mitochondrial. In some cells the protein is part of enzymes destined for use elsewhere, for example, in the gastrointestinal tract; in others it is nonenzymatic and is released into the plasma. At the same time, labeled amino acids become involved in cyclic processes which are constantly in progress; such internal recycling may go on without much release of active material from the cell. Cell size appears to be controlled by a homeostatic mechanism based on new

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5. McFarlane, A. S., Garrow, J. S., and Waterlow, J. C. (1962) In: Radioisotopes in tropical medicine, p. 17.

protein production at rates governed by amino acid supply, and on protein removal at rates depending on the size of the system. In higher animals, the plasma proteins may be regarded as cell proteins that have escaped into a relatively closed system. They are more accessible than cell proteins for sampling, yet their general metabolic behavior may not be very different. Isotopic experiments suggest that they have a common fractional catabolic rate characteristic of the species, and that restoration of normal plasma protein mass after hemorrhage or transfusion may result from automatic adjustments in pool sizes.

Some such homeostatic mechanism explains many nutritional observations. Within a few minutes of injecting labeled amino acids, very high values for protein radioactivity become measurable in the bowel mucosa, pancreas, and liver. In the cells of these organs small protein pools are turning over rapidly, in contrast with the situation in muscle where a large pool is catabolized only slowly—about 1% in 24 hours. Labeled protein molecules begin to appear in the plasma 20 to 30 minutes after injection, and their maximum concentration is reached after 2 to 4 hours. In normal adults it is estimated that some 2-1/2 to 3-1/2% of injected labeled amino acids are used in the first instance to manufacture new protein.

The existence of this amino acid turnover implies an interdependence of all parts that is advantageous in nutritional emergencies. It also implies from the research aspect that with such a closely integrated system there is no real alternative to a comprehensive approach to the phenomena, such as one based on computer analysis of isotopic data. This, however, is still mainly for the future. Meanwhile, simpler tools are available for the nutritionist, such as ^{131}I -human-albumin which provides useful information about the content and exchange rates of albumin in the vascular and extravascular body pools and its rate of catabolism. This is derived quite readily from measurements of radioactivity of the urine and plasma after albumin administration. In healthy adults 9 to 10% of plasma albumin is catabolized in 24 hours. In under-nourished children, e.g., in kwashiorkor, the excess of unlabeled molecules delivered into the plasma during treatment with dietary supplements will accelerate the decline of plasma specific radioactivity. However, as the iodine label of ^{131}I -albumin is never itself involved in protein synthesis, the rate of the latter can be deduced unequivocally only from measurements of catabolism performed on subjects in reasonable protein equilibrium; this is seldom realizable in children who are seriously ill or under treatment for protein deficiency.

Hematopoiesis and the Anemias

Anemias differ from other blood disorders in being commoner and more severe in the tropics than in temperate zones (6). In the tropics, iron-deficiency anemia is usually the outcome of iron loss from intestinal bleeding due to worm

6. Foy, H. (1962) In: Radioisotopes in tropical medicine, p. 73.

infestation. Other associated or adjuvant factors are loss of iron with skin desquamation from excessive sweating, impairment of iron absorption when diets are over rich in phytates and phosphates, and intercurrent infection. The megaloblastic anemias caused by deficiency of vitamin B₁₂ or folic acid respond to treatment with these compounds, but there is often an accompanying iron deficiency state due to hookworm infestation; the anemias of gross malnutrition—as in kwashiorkor and marasmus—are usually hypochromic so that iron therapy is an essential part of a restorative regime. Present ideas about the metabolism of iron have been to a considerable extent derived from studies using radioactive isotopes of this metal (7). These have given fresh information on its absorption and excretion and the dynamics of its transport and disposal. In the normal adult only such small amounts of iron are absorbed from the gut as may be required to balance excretory losses. In this maintenance of iron balance the important factors are the amount of iron arriving in the gut, the form in which it is presented, the integrity of intestinal mucosal function, the levels of body reserves of iron, and the activity of the red marrow. The plasma occupies a central position in iron dynamics since all iron in transit from one site to another traverses the plasma pool. Quantitative work with the isotope ⁵⁹Fe shows that most of this iron is concerned with hemoglobin production and the amount of iron transferred is chiefly determined by the demands of erythropoiesis. This aids the definition of the pattern of red cell formation in normal and abnormal states, and the longevity and distribution of red cells can be followed fairly readily by tagging the subject's own cells with radioactive ⁵⁹Fe or ⁵¹Cr and reinjecting them into his circulation.

Hemolytic anemias are often found in malaria, kala-azar, and bilharziasis and there are several types of hemolytic hemoglobinopathy due to a defective genetic makeup. In fact, hemolytic anemia associated with abnormal hemoglobins constitutes a serious problem in South-East Asia (8), where there is a high incidence of syndromes, such as thalassemia, marked by varying degrees of hemolysis and splenomegaly. Radioisotopes such as ⁵⁵Fe, ⁵⁹Fe, ⁵¹Cr, and vitamin B₁₂ labeled with radiocobalt have proved useful tools in the analysis and separation of these conditions. These isotopes facilitate the study of hemolysis by providing estimates of the life span of red cells and the pattern and sites of their destruction. In at least one such syndrome—due to deficiency of glucose-6-phosphate dehydrogenase—an inborn metabolic error is the etiologic factor; isotope research may lead to the discovery of yet other disturbances of red cell metabolism of genetic origin.

Blood loss due to parasites is exceedingly common in the tropics and lends itself to some elegant forms of isotope research (9). Thus, radioactive ⁵¹Cr used to label circulating red cells is not normally excreted in the feces in significant quantity nor is it reabsorbed from the intestinal tract. Therefore, if the red cells of the patient are labeled with this isotope and reinjected,

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7. Bothwell, T.H. (1962) In: Radioisotopes in tropical medicine, p. 87.
 8. Viranuvatti, V. (1962) In: Radioisotopes in tropical medicine, p. 119.
 9. Roche, M. (1962) In: Radioisotopes in tropical medicine, p. 103.

the amount of blood loss into the bowel from a bleeding lesion can be estimated. This method can be applied to anemia caused by hookworm infestation where the daily loss of blood so calculated is considerable, not infrequently amounting to 80 to 120 ml per day in heavily infected cases. This may also be stated as daily loss per single worm, an average figure for which is 0.03 ml in the case of Necator americanus; or as blood loss for so many ova which has been computed as being in the region of 20 ml per million ova. A rough estimate is that 2.2 ml of blood will be lost per day for each 1000 ova found per Gram of stool; this figure may help the clinician to assess, by means of simple stool counts, the approximate contribution made by worm infestation to the total level of anemia in a given patient. It also happens that not all the iron so lost into the bowel appears in the feces. An average of some 44% is reabsorbed from the bowel—a much higher proportion than in normal persons or in infected or non-anemic patients. Therefore, if red cells are tagged with both ^{51}Cr and ^{59}Fe , it is possible to calculate how much iron is actually lost to the body and how much reabsorbed, as well as the total blood loss.

Deficiency of folic acid or vitamin B₁₂ gives rise to rather complex deficiency states, one characteristic of which is megaloblastic anemia; these states have been investigated with the aid of many isotope-labeled compounds (10). Thus, amino acids, purines, and other nucleoprotein precursors have been labeled with ^{14}C or tritium to elucidate the biochemical defect underlying the megaloblastic change. In addition, ^{15}N -labeled glycine, ^{59}Fe , and ^{51}Cr have been used to study red cell production and destruction. However, the materials that have proved most valuable in the analysis of these deficiencies are radiocobalt-labeled vitamin B₁₂ and tritium-tagged folic acid. With these, it is usually possible to determine whether the deficiency is the result of malabsorption; if so, to demonstrate the nature of the defect responsible since defective absorption of B₁₂ usually reflects lesions of the stomach or ileum and of folic acid lesions of the jejunum. Moreover, in any given syndrome the defect of absorption can be reversed by a characteristic procedure so that the pathogenesis of the condition may be studied by following alterations in the metabolism of the two substances after labeling them during the progress of the disease and during treatment.

Tropical Sprue and Intestinal Absorption (11)

Tropical sprue in its severe form is characterized by diarrhea with typical loose pale bulky stools, asthenia, weight loss, anemia, edema, and multiple vitamin deficiencies. It can, however, also occur in milder forms; in some patients there may be no symptoms until one of the complications, such as vitamin B₁₂ deficiency, arises. The cause of this disease is unknown, but it is probably a syndrome rather than a definite disease entity. Radioisotopes may be used as aids in diagnosis, in the delineation of various absorptive

10. Mollin, D. L. (1962) In: Radioisotopes in tropical medicine, p. 29.

11. Baker, S. J., and Rao, G. A. (1962) In: Radioisotopes in tropical medicine, p. 45.

defects, and also in the more fundamental study of underlying biochemical disturbances. Fats labeled with ^{131}I or ^{14}C have been used for detecting the presence of steatorrhea. They are convenient for the purpose, but less reliable than chemical estimation of the fecal fat excretion. However, labeled materials do offer opportunities for study of the absorption of individual substances both in vivo and in vitro. Vitamin B_{12} absorption is frequently interfered with in tropical sprue, this being most often due to a lesion preventing absorption from the intestine and being unaffected by the addition of extra intrinsic factor. In a few cases, however, deficiency of intrinsic factor alone has been observed as the cause of B_{12} malabsorption. Intestinal absorptive defect usually clears up as the patient recovers, but in a few cases it has been observed to continue for a number of years.

In vitro absorption studies may also be carried out with radioisotopes using mucosal fragments obtained by intestinal biopsy. By this method the function of the mucosa at different levels may be studied, and attempts may be made to identify specific biochemical lesions.

Multiple absorption studies in groups of patients, and in the same patients at different times, have shown that there is a scatter in the pattern of malabsorption and that this pattern may change from time to time. This suggests strongly that the various absorptive defects are due to unrelated biochemical lesions.

(To be continued)

The Clinical Examination of Head Injuries with Emphasis upon Alcohol as a Complicating Factor

By CAPT Robert W. Mackie MC USN. * From the Proceedings of Monthly Staff Conferences of the U. S. Naval Hospital, NNMC, Bethesda, Md., 1961 - 1962.

One of the most perplexing problems with which the junior, or for that matter the senior medical officer, may be confronted is that in which an individual is admitted to the hospital with a combination of two factors—a head injury of obvious significance and acute alcoholism. There seems to be a rather universal dislike amongst physicians for this particular type of patient and, when the reasons for this dislike are examined, they are usually concerned with the doctor's uncertainty regarding the situation. Uncertainty makes for confusion and confusion evokes dislike. When alcohol is a factor in head injuries, this dislike is enhanced by a further distaste for the belligerent, aggressive, abusive patient who won't or can't cooperate, and whose reaction to the physician is all too often to strike out at him or vomit in his general direction. With some understanding of the possible effects of alcohol and of the common effects of head injury, confusion and uncertainty are dissipated, and with it the fear

* Dr. Mackie is currently serving as Chief of Neurosurgery Service of the U. S. Naval Hospital, National Naval Medical Center, Bethesda 14, Md.

and dislike of the problem. Another factor in the physician's attitude toward this patient is the normal human reaction to an individual who is responsible for his own calamity—particularly when the doctor's efforts are met with something less than thanks. A punitive feeling toward the poor soul may color the doctor's thinking and action in his patient's behalf and is about as sensible as disliking a tuberculous patient because he coughs in your face.

The clinical examination: The first item on your agenda should be an examination of the patency of the individual's airway. Remember please, that the responsibility for a tracheostomy should lie with the first person who even wonders if it may be necessary. Nothing else can take precedence over this consideration, since the most skillfully executed diagnosis and plan of management will be of little avail to the patient with an oropharynx filled with blood, mucus, loose teeth, and vomitus. Having satisfied yourself with respect to this vital factor, the general status of the patient and his vital signs should receive next consideration. Have there been other injuries? Is there any suggestion that there has been damage to the spinal cord in terms of flaccidity, anhydrosis, pathological reflexes, abnormal posture, bladder distention, satyrism, or respirations which are other than thoracic? Frequently, in the "dead drunk" individual one may see all of these except two. Anhydrosis, or abdominal respirations, if present, should make one cautious of moving the patient unnecessarily. If it is apparent that there has been no damage to the cord, then a careful search should be made for injury to the thoracic cage. A rapid respiratory rate may be the only clinical clue to a tension pneumothorax resulting from rib fracture. Have there been fractures of the long bones? Is the abdomen soft and apparently non-tender? Is the bladder distended? If so, it should be catheterized for the possible presence of blood, and films of the pelvis should be obtained.

Vital Signs

Is there any suggestion of shock? If there is, and it cannot be accounted for by bleeding from an extensive scalp laceration or other obvious injuries, it may be due to very excessive alcohol intake or to bleeding into the pleural, peritoneal cavities, or the retroperitoneal space. Bear in mind that cord transection effects a perfect sympathectomy, and that this may also induce hypotension. A head injury alone, no matter how severe, will never (and I know that this is a dangerous word) be manifest by shock except in a patient who may be in extremis. The same remarks apply to the pulse rate if it be rapid. If there is a significant bradycardia, head trauma and rising intracranial pressure is the usual prime mover. I have already mentioned the character of respirations and the fact that they may be a clue to cord injury in a comatose patient. In shock they will be rapid but shallow. If they are stertorous, in a patient smelling strongly of alcohol, do not be too quick to ascribe them to alcohol alone—they may be stertorous in significant head injuries as well. If respirations are Cheyne-Stokes in character, the patient may well be doomed unless there is a surgically remediable lesion of some form. The average patient who comes into the average emergency room who presents a

problem in head trauma may frequently spend an hour or more there or in the Department of Radiology, and this may well be a very critical period of time in his illness. Therefore, I beseech you to begin to record vital signs as soon as he is admitted, and see to it that they are followed during this period of initial investigation before he is admitted to a ward.

Injuries of the Scalp and Skull

These have been so well treated by others that only a word is necessary here. I am sure that all of you are familiar with the hazards of closing a scalp laceration without proper exploration of the underlying bone; with the confusion engendered by feeling a "depression" in the central portion of a large hematoma; with the risk involved in attempting to close a large bleeding scalp laceration single-handed in the Emergency Room surgery with inadequate lighting, improper instruments, and a struggling patient. Depressed fractures, if compounded, constitute an emergency; if simple and unaccompanied by significant neurological disorder, they may be disregarded for the present. Compound fractures, depressed or not, always deserve immediate attention in a well-equipped operating suite. Fractures of the temporal bone crossing the middle meningeal arterial markings are certainly worthy of attention, but do not constitute the dire warning so commonly ascribed to them. Basilar fractures, frequently not demonstrable on routine skull films, accompanied by spinal fluid rhinorrhea or otorrhea are, of course, deserving of antibiotic coverage.

Neurological Examination

I would like to compare for a moment the possible effects of alcohol and the possible effects of trauma upon the neurological examination. This is very difficult to present in any form; however, if we take the eight cardinal points in any neurological examination and compare them, I think it will serve our purpose.

1. Sensorium: Alcohol is initially a stimulant and later a depressant with effects ranging from mild good-natured euphoria to a very aggressive behavior, stupor, and finally coma. With respect to trauma, any effect that I have ever seen resulting from the use of alcohol I have also seen from head trauma and vice versa. Therefore, a detailed examination of the individual sensorium will serve very little useful differential purpose.
2. Vital Signs: With excessive use of alcohol there is usually some drop in blood pressure and, in extreme cases, to shock levels. The pulse may be rapid, respirations slow and stertorous. The temperature may be normal or slightly low. In trauma, the pulse rate is depressed, the systolic blood pressure is elevated, and the pulse pressure is increased. Again, respirations may be stertorous or, in severe state, irregular. Temperature may be elevated in instances of basilar injuries.

3. Cranial Nerves: In acute alcoholism the pupils are usually dilated one minute and constricted the next. Convergence is difficult for the patient and poorly maintained. The eyes are frequently in wandering dysconjugate gaze, and nystagmus is almost always elicited. Corneal sensation may be reduced. In trauma, pupillary reaction and equality are of prime importance. Again, eye movements may be wandering, but there may be a paresis evident on prolonged examination. Fundusoscopic examination is usually fruitless, but the finding of venous pulsations or their absence, can be a significant feature. I have never seen papilledema in acute head trauma. Nystagmus is often present in injuries to the posterior fossa, and corneal sensation may be depressed in states of altered consciousness. Unilateral facial weakness can be a valuable clue.
4. Speech: In alcoholism the speech is usually slurred, but as long as the patient can talk, there is usually no pathology in terms of aphasia. Dysarthria is common. The content of speech is often wandering and irrelevant. Seldom is the slurred speech of alcoholism seen in head trauma, and speech abnormalities are usually related to the aphasias.
5. Motor Strength: The alcoholic patient is usually hypotonic and well relaxed, but if disturbed will demonstrate symmetrical strength in all four limbs. Inequality of motor activity, comparing the right side with the left, is generally the result of trauma, not alcohol.
6. Reflexes: In alcoholism these are variable. They may be normal, or slightly hyperactive with mild levels of intoxication and depressed or absent with heavy doses of alcohol. Pathological reflexes are only rarely obtained. Inequality of reflexes or the finding of pathological reflexes are the key factors in trauma and seldom if ever seen in intoxication.
7. Sensation: The interpretation of sensory testing is only as reliable as the patient, however; if intoxicated, even if he is comatose, he will frequently react with symmetrical responses. Here again, inequality of sensory response is the only useful key to the possibility of trauma.
8. Coordination: Even moderate amounts of alcohol can mimic advanced cerebellar pathology so that an examination of an individual's ability to coordinate is of little differential value.

Time

This is the single most important factor in differentiating those effects of alcohol and those of head trauma. A blood Bogan's to determine the level of reducing substances in the blood can be very misleading due to the remarkable individual variation in tolerance for alcohol. The youngster with the Bogan's

of 1.5 may be nearly anesthetized as may be the chronic alcoholic with a cirrhotic liver no longer capable of detoxification. The otherwise well, chronic drinker may be almost unaffected by a Bogan's of 3 or more—therefore this particular test serves little differential diagnostic purpose. The use of glucose and insulin or of Triiodothyronine and related compounds to hasten the catabolism of alcohol may be employed with caution. Caffein sodium benzoate is probably safer. The individual who presents with confusing neurological findings, in whom acute alcoholism and head trauma are coexistent, can produce a truly perplexing diagnostic problem. Yet one thing is certain—the passage of time will do nothing but dispel the effects of alcohol, and any significant neurological abnormalities present after a period of 4 to 6 hours are almost invariably due to the trauma, not to the alcohol.

Differential Diagnosis

What then can be used to differentiate those effects of drinking from those of head trauma? First, the vital signs. In acute alcoholism the pulse will be elevated; in trauma it will usually be depressed. The blood pressure in the alcoholic is usually low; in trauma, the systolic tends to rise. The pulse pressure is normal in the alcoholic and is elevated in instances of significant head trauma. Unilateral motor weakness is never of alcoholic etiology. It is almost invariably due to trauma. Inequality of reflexes or inequality of response to noxious stimulation certainly suggest trauma. The question is frequently raised regarding the value of spinal puncture in an individual who obviously has had trauma, who smells of alcohol, and has no localizing or lateralizing neurological signs. Here no generality can be made and this question must be answered in the light of what each patient may show on examination. Obviously, if there is any suggestion of raised intracranial pressure, a lumbar puncture should certainly be omitted. If the patient is restless, thrashing about or uncooperative, again lumbar puncture serves no useful purpose. The same may be said for skull films. Little is to be gained by X rays of a moving object and it is far safer for the patient not to be moved about unnecessarily.

Observation

This is the real key to management of head trauma with or without alcoholism as a complicating factor. In this hospital we now have available a form which we have evolved here (Table I), and have found useful. Combined with a standard plotting chart for recording the vital signs, this may serve as a useful guide to the patient's progress. Table II is a sample set of orders also designed for use in following the clinical course of the patient with head trauma or for post-craniotomy observation. In the vast majority of cases, time and continued observation are the two tools most valuable in the clinical evaluation of traumatic disorders of the central nervous system.

* * * * *

TABLE I.

PATIENT'S IDENTIFICATION (For typed or written entries give: Name—last, first, REGISTER NO
middle; grade; date; hospital or medical facility)

WARD NO.

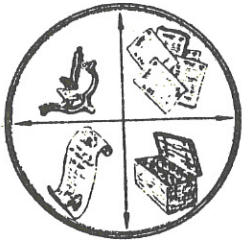
DOCTOR'S PROGRESS NOTES

Standard Form 809

TABLE II.

DOCTOR'S ORDERS
Standard Form 508
508-104

* * * * *



MISCELLANY

AN OPEN LETTER FROM REAR ADMIRAL E. C. KENNEY,
SURGEON GENERAL OF THE U. S. NAVY TO ALL
HOSPITAL CORPSMEN UPON THE OCCASION OF THE 65th
ANNIVERSARY OF THE FOUNDING OF THE HOSPITAL CORPS

As Surgeon General of the United States Navy, I extend my heartiest congratulations and best wishes to all the men and women of the Hospital Corps on the occasion of the sixty-fifth anniversary of the Corps.

Since establishment of the Hospital Corps on June 17, 1898, the record of achievements in the care of our sick and injured is one of which we all can be justly proud. It is indeed fitting and timely that credit be given all members of the Hospital Corps for the full share of responsibility assumed and outstanding performances as part of the Medical Department of the Navy.

Within the past decade, man has experienced a period of growth through advancement unequalled heretofore. The Medical Department shared in this era, during which time it depended on all of its personnel to meet the challenges encountered. You as hospital corpsmen have played a vital role in our team effort, capably and diligently meeting all tasks assigned with an unequalled spirit of pride and enthusiasm.

For myself, and on behalf of the Navy Medical Department---WELL DONE and Happy Birthday!!



E. C. KENNEY

The Independent Duty Hospital Corpsman

By CDR S.P. Tipton MSC USN, Navy 115, Box 55, FPO, N. Y., N. Y.

An independent Duty Hospital Corpsman is one assigned to a station or ship where no medical officer is attached. Weather stations in the tropics, the Arctic regions, and ships such as PC's, DD's, ISD's, Fleet Tugs, Frigates, Submarines, Mine Craft, and some Tankers are examples of such duty. Company complements vary according to type vessels from a very few personnel to approximately 300. Since most hospital corpsmen assigned to independent duty will report to fleet ships, this is primarily for their benefit.

The Hospital Corpsman who is ordered to independent duty will find himself in a unique position. As the senior medical department representative on board, the commanding officer and the executive officer will lean heavily on him in all matters under the cognizance of the Navy Medical Department. A special trust is placed in the hospital corpsman by all officers and men of the ship or station. Whereas, in most other departments there are personnel of similar training and background to whom one can turn for assistance or advice, the hospital corpsman may find himself alone with a very trying medical problem. The trust which the ship's company places in him must be zealously guarded. The respect they have for their "DOC" must be earned, and the only way to earn it is through knowledge, skill, and industry, as well as by being a person others will seek to aid them in personal matters. It is not enough to know how to treat the sick and injured of the ship; he must be able to give accurate information concerning medicare for the men's dependents; and give sympathy as well as assurance to those who need it.

When reporting on board, the hospital corpsman should know and render proper military courtesies; he should be in the correct uniform and have identification tags and all items of required clothing. On most ships and stations where independent duty hospital corpsmen are assigned, contact relieving is the general policy. Due to illness of the incumbent or other circumstances, contact relieving is sometimes not feasible.

The man being relieved will introduce his relief to the Division Officer, generally the Operations Officer or Supply Officer. Hospital corpsmen are usually assigned to one of the above named divisions for mustering and military purposes. The Division Officer will introduce the corpsman to the Executive Officer to whom all medical matters are reported. The Executive Officer usually prepares the HM's evaluation sheets. He will introduce the corpsman to the Commanding Officer who will state his policy concerning the Medical Department. Needless to say, "His policy is your policy."

On relieving, hold a complete inventory of all medical department equipment and supplies. Check Battle Dressing Stations and Decontamination Stations for medical equipage and supplies. Inspect all stretchers, first aid boxes, and portable medical lockers. A memorandum noting deficiencies, if any, should be made to the Commanding Officer via the Executive Officer. If no report of deficiencies is made, the inference is that there were none at the

time of relieving. If there is any discrepancy in the inventory of narcotics, it must be reported immediately in accordance with Art 3-36, Manual of the Medical Department, and Art 194, Treasury Department, Bureau of Narcotics Regulation Number 5 of 1 April 1949.

If time permits, check all health and dental records to insure all are on board, and to ascertain their correctness, status of immunizations, chest X rays, and physical examination programs.

When for any reason the hospital corpsman being relieved is detached prior to the arrival of his relief, he should make a written report to the Commanding Officer via the Executive Officer concerning all areas mentioned above. Following is a suggested check-off list for being relieved by either contact or delayed reliefs.

From: Senior Medical Department Representative

To: Commanding Officer

Via: (1) Relieving Hospital Corpsman

(2) Executive Officer

Subj: Status of Medical Department upon being relieved; report of

1. I certify that the Medical Department is as shown below:

ITEM	YES	NO
a. Complete Medical I.O.L. on board.		
b. If no, are all missing items on order.		
c. All medical equipment in good working order.		
d. Battle Dressing Stations are properly stocked per Type Commanders instruction.		
e. First Aid Boxes properly stocked and sealed.		
f. Proper number of portable medical lockers on board.		
g. Inspected within past 30 days.		
h. Stretchers are all in good condition.		
i. All stretchers are equipped with handling lines and safety straps.		
j. All health and dental records are on board.		
k. All health records have been verified.		
l. All immunizations are current.		
m. Annual chest X-ray programs current.		
n. Sonarmen have had annual audiometric test.		
o. Bacteriologic exam of potable water accomplished for past quarter.		
p. Ships Medical Department Organization Manual is current.		
q. Is list of location of stretchers, First Aid boxes, Gun bags and Portable Medical lockers current.		
r. Status of funds (Med Dept Target Amount for fiscal year).		
(1) Target amount for ship _____		
(2) Total expenditures for FY _____		
(3) Unexpended balance _____		

(Signature, incumbent Medical Department Representative)

FIRST ENDORSEMENT

From: Relieving Medical Department Representative
 To: Commanding Officer
 Via: Executive Officer

1. An inspection of the Medical spaces, supplies, equipment, and records has been made and the following deficiencies were noted:

(Signature, Relieving Medical Department Representative)

* * * * *

Camp Lejeune Medical Society Established

The Camp Lejeune Medical Society has been successfully launched—with 81 medical officer members—on a course of socio-professional meetings. Because of the considerable concentration of Medical Corps members in the Camp Lejeune-Cherry Point complex there has been a need for an adequate meeting ground or medium for expression of their interests and an exchange of ideas. Presentations by visiting speakers lend added strength and stimulus and constitute a key feature of the program. The following talks represent the schedule for the last portion of FY 1963:

- Feb 28 - Cryobiology, Captain L.L. Haynes MC USN, Commanding Officer, U.S. Naval Hospital, Beaufort, S.C.
- Mar 21 - Trends in Medical Education, Dr. John L. Caughey, Associate Dean, Western Reserve University School of Medicine, and Chairman of the Committee on Student Affairs of the Association of American Medical Colleges.
- Apr 18 - Tropical Medicine: Malaria, Captain Frank Soule MC USN, Chief of Medicine, U.S. Naval Hospital, Bethesda, Md.
- Apr 20 - Tropical Medicine: Amebiasis, Captain Soule
- Apr 25 - Epidemiology of Diabetes Mellitus, CDR Vaun Newill MC USNR, Assistant Professor of Preventive Medicine and Medicine; Senior Instructor, Biometry, Western Reserve University School of Medicine.
- May 17 - Some Clinical and Research Experiments with Psychoactive Drugs, Dr. A.J. Prange Jr., Assistant Professor of Psychiatry, The University of North Carolina School of Medicine.

Officers of the Camp Lejeune Medical Society are:

President..... Captain G.L. Calvy MC USN
 Vice President..... Captain J.K. Cunningham MC USN
 Secretary..... Captain F.T. Norris MC USN
 Treasurer..... LCDR G.E. Wire MC USN
 Special Events..... Captain J.E. Humphries MC USN
 Special Events..... LT N. Livrieri MC USN

NOTE: Professionally, all medical activities in the Camp Lejeune-Cherry Point area have maintained an upward curve of accomplishment. In the case of the Naval Medical Field Research Laboratory at Camp Lejeune, it has contributed significantly in the field of epidemiology, especially as it concerns infectious diseases and the nutritional aspects of cardiovascular disease. Publications from the latter activity have been well received and have appeared in the J. A. M. A. (4 articles); The New England Journal of Medicine (4); with other appearances in American Journal of Hygiene; Military Medicine; and the Proceedings of the Society of Experimental Biology, etc. The officers and other members of the new medical society are to be congratulated on their organization, for it represents medicine in its best tradition—a page out of the teaching of Sir William Osler . . . who always asserted that doctors who do not attend professional meetings and engage in the free exchange of discussion will sooner or later become stale and fail to progress. — Editor

* * * * *

Medical Service Corps Training Notice

Applications are desired from MSC officers for assignment to the next Sanitary Science course convening at the University of California, Berkeley, California, in January 1964. Requests should be submitted in the format outlined in BuMed Instruction 1520.12B and reach the Bureau prior to 1 July 1963.



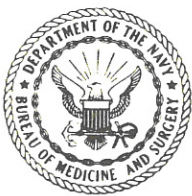
R. S. HERRMANN

* * * * *

Dependents' Medical Care Office Moves

The Department of the Army has announced that, effective this summer, the Office for Dependents' Medical Care (ODMC) will be moved from Washington, D. C. to the Fitzsimons General Hospital in Denver, Colo. Relocation of the office in Denver will result in more effective and economical liaison with Medicare contractors located throughout the United States. Established in 1956, the office comprises twelve military and fifty-one civilian personnel under the jurisdiction of the Army Surgeon General.

The office for Dependents' Medical Care administers within the U. S. and Puerto Rico the civilian portion of the Dependents' Medical Care Program for dependents of members of all uniformed services, including the Navy. The office provides for payment to sources of civilian care primarily through contracts for bill-paying services with various civilian agencies, such as state medical societies, insurance companies, Blue Shield, and Blue Cross plans.



THE SURGEON GENERAL OF THE NAVY
WASHINGTON

TO THE OFFICERS OF THE NAVY NURSE CORPS

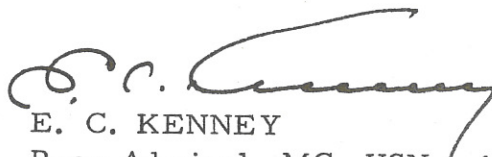
On this memorable occasion of your Corps' Fifty-fifth anniversary, I extend greetings and hearty congratulations to all of you.

As very important members of the Medical Department team, your devotion to duty and your contributions to the health of the people of this nation and throughout the world, lend strong support to the accomplishment of our mission.

You have adapted nursing practice to support the needs of a nuclear-powered Navy and a technological age and continue to keep stride with the rapidly changing concepts of medical and nursing service.

Your record of achievements has been a source of pride to all members of the Medical Department, and your lustrous history should provide inspiration and a large measure of satisfaction to the thousands of professional women who have served in the Navy Nurse Corps during the past fifty-five years.

HAPPY BIRTHDAY.


E. C. KENNEY
Rear Admiral, MC, USN
Surgeon General

FROM THE NOTE BOOK

DESK NOTES. This twice-monthly publication from the Office of the Surgeon General, was discontinued after the issue of April 19, 1963. As a result, certain articles appearing in that publication will be incorporated in the Medical News Letter. One of these, Surgeons General of the Past, a series of brief biographies of all the Surgeons General, will be continued in the Medical News Letter. Anyone desiring previous installments of these biographies may obtain them by addressing a request to JO2 E.P. Kuhn Jr, Code 18, Bureau of Medicine and Surgery, Navy Department, Washington 25, D.C.

Surgeons General of the Past *

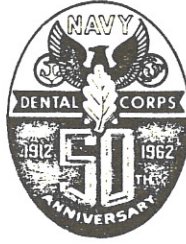
The tenth Surgeon General, U.S. Navy, and the fourteenth Chief of the Bureau of Medicine and Surgery, James Rufus Tryon, was one of the most outstanding incumbents of the office. He was born in New York City on September 24, 1837, and graduated from Union College of Schenectady, N. Y., with Bachelor of Arts and Master of Arts degrees. He received his medical degree from the Medical School of the University of Pennsylvania in 1861, and was appointed an assistant surgeon in the U.S. Navy from New York on September 22, 1863, and assigned to the West Gulf Squadron. He was landed at the Naval Hospital, Pensacola, Fla., in charge of wounded from the Battle of Mobile Bay, and later was ordered to make a special report to the Navy Department on the wounded treated at Pensacola during the War Between the States.

Doctor Tryon was Assistant to the Chief of the Bureau of Medicine and Surgery from 1866 to 1870; he is believed to be the officer who, with the assistance and encouragement of Surgeon General Horowitz, prepared the manuscript and still unpublished medical and surgical history of the Navy in the War Between the States. Attempts to obtain funds from the Congress for the publication of this report—which was to parallel the medical and surgical history published by the War Department—failed; the manuscript has since been lost and all attempts to locate it have been without avail.

In 1872, Doctor Tryon superintended construction of the Naval Hospital in Yokohama, Japan, which was destroyed by the earthquake of 1923. He was appointed by President Grover Cleveland as Chief of the Bureau with the rank of Commodore on May 10, 1893, and held this office until 1897. His broad background of naval life and experience, combined with high abilities, made his tenure as Surgeon General an important one for the Naval Medical Department.

* This is the fourteenth in this series of brief biographies.

DENTAL



SECTION

Staphylococci in the Upper Respiratory Tract

Donald E. Shay and George G. Clendenin, School of Dentistry, University of Maryland, Baltimore, Md., "Incidence of Coagulase-positive Staphylococci in the Upper Respiratory Tract of Dental Students and a Study of Their Transmission during a Routine Dental Prophylaxis," J Dent Res 42(1): 110-122, Jan-Feb 1963.

The investigation of the incidence and transfer of pathogenic *S. aureus* has been continued. The experiments reported here were conducted on two classes of dental students during a period of 1 year. One class (Class A) was swabbed both years, i. e., at the beginning of their clinical training and 1 year later. The other class (Class B) was swabbed only at the beginning of their clinical training.

The following general conclusions were made from this study: (1) a carrier tended to harbor only one phage pattern organism at a time; (2) the nasal cavity appeared to have been the main reservoir of the phage-typable staphylococci in an asymptomatic carrier; and (3) the persistent type of carrier tended to remain persistent with the same phage pattern.

The incidence of coagulase-positive carriers was 65-88 percent. However, compared with results of previous studies on dental students, the incidence in both classes was somewhat high. The difference in incidence was explained partially by a difference in the definition of staphylococcal pathogens. Two other factors that may have accounted for the variation in results were the number of different swabs taken from each subject and the areas swabbed. From these results, it was found that from 3-13% of the carriers would have been missed if only one rather than three swabs on different occasions had been obtained and that from 13-19% of the coagulase-positive carriers would have been missed if only nasal swabbings had been used instead of nose, throat, and mouth swabbings.

Statistical analysis of all the results was included. An analysis of one class indicated there was no significant increase in the carrier rate from the beginning of their Junior year (first clinical year) to the beginning of their Senior year. Approximately 50%, however, changed their status from carrier to non-carrier or from non-carrier to carrier. The other 50% remained either carrier or non-carrier.

One group of students, who were known carriers of coagulase-positive staphylococci, represented the dentist, while students known not to be carrying

coagulase-positive organisms represented the patient. Each experiment consisted of the carrier-dentist performing a routine prophylaxis on the non-carrier patient, lasting an average of 34 minutes. With the use of swab techniques, attempts were made to isolate from the patient organisms known to have been harbored by the dentist. Air samplers were used to determine whether the dentist liberated his organisms into the environment of the dental chair.

In 19 experiments using healthy normal dental students who were asymptomatic nose, throat, or mouth carriers, no direct or indirect transfer of pathogenic staphylococci to negative students was demonstrated. Two experiments in which organisms were carried on clothing, as well as on other areas, showed evidence of a transfer to the air, thus supporting the views of other investigators that a clothing carrier has a greater chance of transmitting his organism. No conclusions could be made regarding transmission by symptomatic carriers, since satisfactory subjects were not available.

The Fort Detrick slit samplers used were very satisfactory for obtaining air samples. They were simple to handle and required a minimum of laboratory time, and the experimental time could be correlated easily with the impinging time. Of the 10 carrier-dentists used, 3 had organisms resistant to penicillin, as determined by the paper-disk method. Most of the organisms were sensitive to the other 15 antibiotics used.

* * * * *

Oral Moniliasis

Francis V. Howell, Dental Progress 3(3): 172-175, April 1963.

Thrush, or oral moniliasis, is caused by the fungus *Candida albicans*, formerly called *Monilia albicans*. At best, it is a distressing ailment; at worst, when uncontrolled, it can become a systemic disaster. Dentists and physicians must take decisive steps to arrest its progress before it spreads from the oral cavity.

Amphotericin B in Orabase is a topical antibiotic preparation with adhesive properties that make it suitable for use in moniliasis of the oral cavity. It has been tested successfully in 40 patients having suspected or confirmed monilial infections.

The most responsive lesions were those seen under dentures and those due to overgrowth of candida after the use of topical penicillin preparations. There was also response where candida was seen in a mixed infection.

Cases not involving monilia also responded. This may be a result of the protective qualities of the vehicle itself. Success of the treatment may depend upon the site of application. There were no side reactions.

* * * * *

Air Turbine in Impacted
Third Molar Surgery

Lucian Szmyd, DMD, MS, Lackland Air Force Base, Texas; Ira L. Shannon, DMD, MSD, Brooks Air Force Base, Texas; Carlos F. Schuessler, DDS, Brooks Air Force Base, Texas, and Clarence M. McCall, DMD, MS, U.S. Air Force. J Oral Surg 21(1): 36-42, January 1963.

A clinical evaluation of the higher bur speed technic (air turbine) in the removal of impacted teeth was carried out in 100 mandibular third molar extractions. Body fluid 17-hydroxycorticosteroid determinations were utilized as an objective measurement of patient response to stress induced by the two oral surgical technics. The following observations were made when the results of therapy with the air turbine unit were compared with those achieved when theallet and chisel were used:

No significant differences in postoperative pain, swelling, trismus, or hemorrhage were found.

Patients expressed a definite preference for the higher bur speed technic. The time required for surgery was essentially the same for both methods.

For the operator, one method was not appreciably more difficult than the other.

The incidence of osteitis alveolaris was virtually identical for each of the two test groups.

The number of duty days lost during postsurgical convalescence was essentially the same for each technic.

Significant differences in body fluid 17-hydroxycorticosteroids were not detected.

These observations indicate that, except for patient preference, neither procedure could be considered as the method of choice. The response of the patients to the two methods was virtually identical as indicated by both subjective and objective measurements.

* * * * *

Personnel and Professional Notes

Lt Wilkie Presents Lecture. Lt Noel D. Wilkie, DC, USN, Assistant Dental Officer, U. S. Naval Air Facility, Naha, Okinawa, presented a lecture with slides on "Photography, Its Uses and Application in Dentistry," before a combined meeting of the Army, Navy, and Air Force dental officers and the local Okinawa Dental Association on 28 March 1963, at the Fort Buckner Officers' Club.

Dr. Glickman Lectures at NDS. Dr. Irving Glickman, Research Professor of Oral Pathology and Professor and Chairman, Department of Periodontology, Tufts University School of Dental Medicine, Boston, Massachusetts, lectured

on "The Current Status of Periodontal Treatment" to staff, resident, and post-graduate dental officers, and civilian and military guests, at the U. S. Naval Dental School, Bethesda, Md., on 1 March. The program was televised from the National Naval Medical Center by closed circuit to other medical and dental activities in the local area. Dr. Glickman, a Diplomate of the American Board of Oral Pathology, the American Board of Periodontology, and the American Board of Oral Medicine, is Director and Founder of the Berkshire Conference in Oral Pathology and Periodontology. He is author of "Clinical Periodontology" and the co-author of "A Textbook of Pathology," "Preventive Dentistry," and of more than 70 scientific publications.

Capt Rovelstad IADR Section Chairman. Capt Gordon H. Rovelstad, DC, USN, participated in the 41st Annual Meeting of the International Association for Dental Research as Chairman of the Section on Oral Pathology, and member of the Committee for Selecting Meeting Places.

During the meeting of the Executive Council, Capt Rovelstad was placed in nomination for the office of Secretary-Treasurer of the International Association for Dental Research, election to be held in March 1964.

Volunteer No. 1,000 in Preventive Dentistry Study. An enlisted man attached to the U. S. S. ENTEMEDOR (SS-340), recently became Subject No. 1,000 in the Preventive Dentistry Study being conducted by the Dental Branch of the U. S. Naval Medical Research Laboratory. This study is a part of a Bureau of Medicine and Surgery approved project which seeks to determine the efficiency of stannous fluoride as a caries-preventive agent. The study has been in progress at MRL for 2 years. A total of 1500 subjects will be required to complete the investigation.

Subjects for the project are obtained from among candidates for the Submarine School. To be suitable these candidates must meet certain requirements, --be within the age limits (18-24), have sufficient obligated service time and reasonable expectation of remaining on duty on the East Coast, in order to allow the required follow-up examinations. Each subject accepted for the program is given a thorough dental examination including bite-wing X-ray pictures and an initial oral prophylaxis treatment with a special pumice containing varying amounts of stannous fluoride. The oral prophylaxis treatment is repeated after one year. However, each subject is examined every 6 months to observe the incidence of new cavities. For these re-examinations, it has sometimes been necessary for Captain Scola to follow his subjects to Nuclear Power School in Bainbridge, Maryland, or to the Shipyards at Portsmouth, N. H., or Philadelphia, as their ships go into overhaul.

If the results of the study indicate a significant reduction of tooth decay as a result of the annual oral prophylaxis with the stannous fluoride pumice mixture in conjunction with the daily use of a stannous fluoride dentrifice, the Bureau of Medicine and Surgery will give consideration to a service-wide program of preventive dentistry along these lines.

Tetracycline Antibiotics Discolor Teeth. On April 18, 1963, the Food and Drug Administration released a message to physicians and dentists concerning the serious discoloration of teeth by 3 drugs: tetracycline, chlortetracycline, and oxytetracycline. A fourth drug, demethylchlortetracycline, may also be expected to discolor teeth, but FDA has no such information to date.

Manufacturers of the 3 antibiotics have been advised to take immediate steps to include a warning in the labeling of the drugs to indicate the risk involved in the use of those drugs during tooth development (last trimester of pregnancy, neonatal period and early childhood).

The mechanism appears to depend on the tetracycline antibiotics' remarkable affinity for calcifying tissues. Indeed, antibiotic fluorescence has been used in research on healing in oral surgical sites (OS, OM, OP 15:265, 1962), (JADA 64:224, 1962), and in studies of dentin deposition (J Dent Res 40:1079, 1961). It appears that the tetracycline complexes formed in developing teeth become discolored in erupted teeth after exposure to light. Although the retention of these tetracyclines in bones and teeth appears to be relatively permanent, there is no evidence to indicate that it involves any hazard to health. Thus the esthetic problem and its potential influence on a patient's mental health appear to be the important factor to consider in prescribing these drugs. The effect occurs most often after long term use of the drug, but it has been observed after short-treatment courses. (Lancet 7232:743, 1962 and 7234:861, 1962), (Brit Med J 5289:1401, 1962), and (Brit Dent J 113:51, 1962).

Panoramic X-Ray Unit Installed at Naval Academy. A panoramic x-ray unit was recently installed in the dental department at the U. S. Naval Academy. This is the first permanent unit to be used by the U. S. Naval Dental Corps. Captain K. L. Langeway, DC, USN, the Senior Dental Officer at the Naval Academy, is initiating a program of incorporating the panorex film in the Dental Folder as part of the permanent dental history for each Midshipman starting with the 1967 class.

An experimental design of panoramic x-ray was evaluated by personnel of the Dental Research Facility, Dental Department, U. S. Naval Training Center, Great Lakes, Illinois. Among the conclusions reached as a result of the evaluation were: (1) The average time required for the complete x-ray was 1 minute 24 seconds, using one x-ray film, as compared to 15 minutes for the usual full-mouth procedure utilizing 14 separate films. (2) The amount of radiation was greatly reduced. (3) Gross dental, oral, periapical, bone or joint pathology was easily determined. The temporomandibular joint and maxillary sinuses were well defined. (4) The over-all dental health in sufficient detail is shown which aids in treatment planning. (5) Conventional intra-oral methods are required to confirm areas of suspicious or minimal pathology. (BuMed 611)

* * * * *



PREVENTIVE MEDICINE

Statement on the Status of Measles Vaccines

Ad Hoc Advisory Committee on Measles Control. Special Report - Measles Investigations Progress Report, I. Statement on the Status of Measles Vaccines prepared by Ad Hoc Advisory Committee on Measles Control. Report No. 6, Dept. of Health, Education, & Welfare, PHS, Bureau of State Services, Measles Investigation Unit, Surveillance Section, CDC, Atlanta 22, Ga. pp. 1-6, 21 March 1963.

In order to make available to the health profession, concise information regarding the status of inactivated and live attenuated measles virus vaccines and their appropriate application, an Advisory Committee to the Surgeon General, U. S. Public Health Service, DHEW, was convened on 25 February 1963, to appraise the available data. Considerable research has been carried out by many investigators in developing and testing these vaccines. Additional studies are planned or are in progress to define and clarify many practical questions relating to their use, such as, optimal immunization schedules, relative efficacy and safety, and others. The present report is an interim statement based on all of the current, available information.

A. Live Attenuated Measles Virus Vaccine (Edmonston strain)

Developed in the laboratory of Dr. John Enders, this vaccine, prepared in chick embryo tissue culture, was first tested in 1958 and since has been given to approximately 25,000 persons in the United States, either alone or in combination with gamma globulin. The vaccine induces active immunity following a single dose and produces in the recipient a mild or inapparent, noncommunicable measles infection. Although in the majority the symptoms are minimal, approximately 30-40% experience fever, of 103° F (rectal) or greater, beginning about the sixth day and lasting 2 to 5 days. However, even those with high fever may experience relatively little disability. In 30 to 60% a modified measles rash is seen which, unlike true measles, begins with or after the subsidence of fever. A few develop mild cough, coryza and Koplik spots.

An antibody response equivalent to that seen in regular measles develops in over 95% of susceptible children. Measured as late as 4 years later, the antibody levels induced by the vaccine have demonstrated a stability equivalent

to that following the natural disease. Protection upon exposure to measles has been noted for as long as 3 years and 8 months after vaccination.

If standardized Measles Immune Globulin is given in the recommended dose at the same time as the live attenuated vaccine, but at a different site and with a separate syringe, clinical reactions to the vaccine are sharply reduced. About 15% demonstrate fever over 103° F (rectal); the duration of fever is shortened and the incidence of rash is reduced. Although the frequency of serological conversion is the same as that following live attenuated vaccine alone, the level of induced antibody attained appears to be slightly decreased. Antibody titers have been shown to persist for at least 3 years and protection against the naturally occurring disease has been noted for at least 2 years.

To date, there have been no reports of encephalitis or other serious reactions following administration of the live attenuated vaccine to normal children. A few instances of convulsions, apparently of the febrile type and without known sequelae, have been recorded.

B. Inactivated Measles Virus Vaccine

The inactivated vaccine is composed of attenuated Edmonston strain measles virus propagated on monkey kidney or chick embryo tissue culture, and subsequently inactivated, concentrated and precipitated. The vaccine has been customarily administered, in field trials, in a three dose schedule at monthly intervals. Reactions to the vaccine are no more frequent than those seen after administration of alum precipitated products, such as diphtheria and tetanus toxoids.

Serological conversion after 3 monthly doses of inactivated vaccine is induced in 90% or more of susceptible children. Antibody titers, however, are distinctly lower than those following the live vaccine and in most cases decline to undetectable levels over the following year. Preliminary data, however, indicate that these children, although without detectable antibody, demonstrate a booster response when given a fourth dose of vaccine.

Under the conditions of natural challenge, the vaccine has demonstrated an efficacy of between 80 and 95% during the immediate six months following administration. Whether the protective effect of the vaccine persists beyond this time is not yet known.

C. Combination Schedules Employing Inactivated and Live Attenuated Virus Vaccines

If live attenuated vaccine is administered one to three months after one or two doses of inactivated vaccine, clinical reactions caused by the live vaccine are sharply reduced; resultant antibody titers are sharply boosted over those produced by the inactivated vaccine alone and appear to be equivalent to those observed following the administration of live vaccine with gamma globulin. Less than 10% demonstrate fevers over 103° F (rectal); rash, cough

and coryza are rarely observed. Serological conversion occurs in 95% given this combination; information as to the duration of antibody persistence is not yet available.

Under natural challenge, this combination has demonstrated an efficacy of over 95% during the six months following administration. Although the protective effect of this vaccine combination may persist beyond this time, substantiating data are not yet available.

D. Recommendations for Vaccine Use

(1) Age

Over 90% of children will, at some time, have clinically evident measles. Marked by severe constitutional symptoms and a 7 to 14 day course, the disease is of additional concern because of secondary complications such as bronchopneumonia and encephalitis. The vast proportion of cases of measles occur among those under 15 years of age, particularly those aged 2 to 6 years; only occasionally do cases occur among adults.

Vaccine use then is indicated primarily for children; it should be administered to those without a history of measles, at 9 months of age or as soon thereafter as possible. Those younger than 9 months frequently fail to respond to immunization with the attenuated virus vaccine because of the presence of residual maternal antibody. Vaccination of adults is rarely indicated since all but a very small percentage are immune. Limited data indicate that in the adult, reactions to the vaccine approximate those seen in children.

(2) High Risk Groups

Immunization against measles is particularly recommended for those especially prone to develop serious complications should they acquire natural measles infection. Specifically, these include institutionalized children and those with cystic fibrosis, tuberculosis, heart disease, asthma and other chronic pulmonary diseases.

(3) Prevention of Natural Measles Following Exposure

Limited studies to date indicate that there is no protective effect conferred by either vaccine when given after exposure to the natural disease. However, live attenuated vaccine administered only a few days previous to exposure appears to confer substantial protection.

(4) Community Programs

Rarely would there appear to be a need in the United States for mass community immunization programs. Immunization should be carried out as indicated by private practitioners and through well-child conferences of established public health programs.

DOSAGE TABLE

SCHEDULE	TYPE OF VACCINE	DOSES* AND ADMINISTRATION	COMMENT
1	Live, Attenuated Vaccine	1	Although the live, attenuated vaccine may be administered safely with or without the simultaneous administration of Measles Immune Globulin, most physicians will wish to use the two combined because of the lessened reactivity.
2	Live, Attenuated Vaccine plus Measles Immune Globulin	1 plus Measles Immune Globulin (.01 cc per pound at different site with different syringe)	
3	Inactivated Vaccine	3** (monthly intervals)	In view of the rapid fall off in antibody and lack of data regarding persistence of immunity beyond 6 months, use of this vaccine is not preferred at this time except for special groups in which live attenuated vaccine is contraindicated.
4	Inactivated Vaccine followed by Live, Attenuated Vaccine	Pending	This approach to measles immunization appears promising; recommended schedules will be developed as more data become available.

* Manufacturers directions regarding volume of dose should be followed.

** In view of rapidly declining antibody levels, it would appear that one or more subsequent booster doses will be necessary. Data are not yet available to indicate when or with what frequency these will be required.

E. Dosage Schedules

Four different dosage schedules can be considered for use at the present time in the United States. (See Table)

F. Contraindications to Use of the Vaccines

Parenthetically, it should be noted that neither the live nor the inactivated vaccines contain penicillin.

(1) Live Attenuated Vaccine

*(a) Pregnancy

*(b) Leukemia, lymphomas and other generalized malignancies

*(c) Therapy which depresses resistance such as steroids, irradiation, alkylating agents and antimetabolites

*(d) Severe febrile illness

*Although there are no reports of unusual complications in any of these conditions excepting leukemia, it is conceivable on theoretical grounds that potentiation of the attenuated disease might occur or, in the case of pregnancy, that damage of the fetus might result. Accordingly, if immunization is indicated, the inactivated vaccine should be used.

(e) Recent Gamma Globulin Administration

If more than .01 cc/lb. of gamma globulin has been administered within the preceding 6 weeks, immunization should be deferred since the administered globulin may block the vaccine take.

(f) Marked Egg Sensitivity

Since the virus is grown in chick embryo tissue culture, the vaccine probably should not be administered to extremely allergic children as indicated by their inability to eat eggs or egg products.

(2) Contraindications - Inactivated Vaccine

Either monkey kidney or chick embryo tissue culture may be employed for inactivated vaccine production. (This will vary according to the manufacturer.) If chick embryo tissue culture material has been used, precautions (as above) should be taken for possible marked egg sensitivity.

No other contraindications are known.

G. Continued Study

A number of studies are currently in progress which will serve to provide a better measure of the efficacy of the different vaccine schedules. It is

important that children in these trials be followed for many years to determine the durability of immunity conferred, both in terms of serological response and in terms of protection against naturally occurring disease. Studies to evaluate the possible use of inactivated vaccine for infants less than 9 months of age are in progress.

Although approximately 25,000 children in the United States have received the live, attenuated vaccine, and a somewhat smaller number the inactivated vaccine, without serious complications, careful surveillance for significant adverse reactions is of the utmost importance as the number immunized is extended. It is important that any serious reactions be carefully evaluated and reported in detail to local and State health officials. The Communicable Disease Center specifically is requested to assume a continuing active role in maintaining a close surveillance of all such cases.

The members of the Committee are:

James L. Goddard, MD, Chairman

Donald A. Henderson, MD, Secretary

Dr. John F. Enders

Dr. Harry A. Feldman

Dr. Archie L. Gray

Dr. Hugh H. Hussey

Dr. David T. Karzon

Dr. Saul Krugman

Dr. Arthur J. Lesser

Dr. Roderick Murray

Dr. Frederick C. Robbins

COMMENT: It is expected that Live Attenuated Measles Virus Vaccine and standardized Measles Immune Globulin will be available through military medical supply channels in the near future. Immune Serum Globulin, USP, FSN 6505-153-8278 is not suitable for use with attenuated measles virus vaccine because of its high measles antibody content.

—PrevMedDiv., BuMed.

Electric Toothbrushes

The Underwriters Laboratories (UL), Inc., 161 Sixth Avenue, New York 13, New York, offers the following advice concerning safety of personnel using electric toothbrushes:

a. Electric toothbrushes have been in use since 1941 with no record of a casualty from their use.

b. Originally they were prescribed by dentists on a case basis to aid in treatment of gums.

c. Recently the patents expired and manufacturers have produced a cheaper version. Advertisements showing children using these brushes have

caused UL to tighten their tests of electric toothbrushes starting 1 February 1963.

d. The present versions of electric toothbrushes are considered safe by UL if they are not dunked in a washbowl of water. The present UL test procedure consists of using the item for 25 brushings, washing the brush off in water, then holding vertically so that water runs down the unit. The unit is then tested for dielectric strength and insulation resistance.

e. After 1 February 1963 the subject units will be required to pass a dunk test to permit use of the electric toothbrushes by children. The test will consist of three 30-second dips in a salt water solution followed by dielectric strength and insulation resistance measurements.

f. The removable toothbrush head is plastic. When removed, a short length of metal shaft is exposed. The Underwriters Laboratories, Inc., said that it could not make an across-the-board statement that the metal shaft (exposed when toothbrush head is removed) is isolated electrically from the 110 volt electric circuit inside the unit. However, this voltage is stepped down by a rectifier in the unit. The motor runs at 1-1/2 volts. The voltage on the armature shaft which is exposed to touch is 1-1/2 volts.

g. UL considers the present versions of subject units safe for adult use. They are not safe for children since children may play with them submerged in water.

h. Two approaches will be used to make the units dunk-proof: (1) by encapsulating the electrical interior such as by an epoxy resin, or (2) by making the case watertight.

In view of the above information, the Bureau of Ships considers that the subject units are plastic implements similar to electric shavers and do not require a grounding conductor and plug. However, the following precautions apply:

a. Personnel should continually observe cord to make sure that it is in good condition and not cracked or exposing copper conductor.

b. If toothbrush falls in water, unplug the cord from receptacle before handling. Have electric shop check by insulation resistance tests before re-using.

c. Keep toothbrush on unit when unit is plugged in. (Unplug unit from receptacle before removing brush from unit.)

d. Use only those electric toothbrushes approved by "UL."

Safety Section, PrevMedDiv, BuMed.

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Cat-Scratch Fever

Los Angeles, California, County Health Department, Division of Acute Communicable Disease, 9 March 1963.

Cat-scratch disease (Cat-scratch fever, non bacterial lymphadenitis, benign inoculation lymphoreticulosis, or infectious lymphoreticulosis) was first described in 1932. Although most workers consider it of viral etiology, this is

not proven. It is thought that there is a relationship with the psittacosis-lymphogranuloma-venereum group of viruses. This is based on complement-fixation tests using a group antigen.

The disease is widespread; cases have been reported from all parts of the world. Some writers feel that the disease may be epidemic and have noted it most frequently in the fall and winter months. There is no differentiation as to sex. Children and teenage youngsters are most commonly infected. The disease is usually transmitted by the bite, scratch, or lick of a cat although, in rare instances, other animals such as birds and dogs have been implicated. Household outbreaks occasionally occur. The disease is not transmitted from man to man. Animals appear to be highly resistant.

The incubation period of cat-scratch fever is usually 7 to 14 days but may be as short as 2 days. Signs and symptoms of cat-scratch fever are both local and general. A small pustular furuncle or scab like lesion at the site of contact with a cat is frequently the primary sore. The regional lymph nodes draining the affected area then become involved. Occasionally a rash appears which may last up to 48 hours and may be maculopapular, finely papular or erythematous. This early phase of cat-scratch fever is marked by mild symptoms. Fever, if present, is both mild and variable.

The regional adenopathy, which may occur as early as 4 days or more than a month following a known skin contact, is marked by enlargement of the regional lymph nodes. These nodes may vary in size, may remain movable and nontender or they may become tender and painful. The nodes may enlarge to the size of a medium sized tangerine or lemon. They are usually solitary and are most commonly found in the axillary, epitrochlear, cervical, inguinal and femoral regions. During this stage, the patient becomes more severely ill, and the temperature may rise to 102°-104° F. Malaise, headache, chills, and loss of appetite are sometimes noted. The temperature usually persists until there is lymph node rupture. Complications of cat-scratch fever are rare. The nervous system is occasionally affected; encephalitis and cerebral thrombophlebitis have been reported. Pneumonia, osteomyelitis and erythema nodosum have also been observed.

The differential diagnosis includes tularemia, infectious mononucleosis, lymphosarcoma, Hodgkin's disease, tuberculous adenitis, lymphogranuloma venereum, benign and malignant tumors and pyogenic adenitis.

A specific skin test is of great value in diagnosis. The antigen is composed of diluted, heated and inactivated pus from a previous patient. Over 90% of patients tested who have cat-scratch fever react positively to the test; false positives are rare. No fatal cases of cat-scratch fever have been reported. Ordinarily, the disease subsides after drainage of the suppurative nodes. There is, however, a non-suppurative form of cat-scratch fever which tends to be chronic.

Cat-scratch fever is treated symptomatically. The lymph node should be opened if fluctuation occurs. Signs of fluctuation do not always determine suppuration. Affected nodes which were thought to be nonsuppurative had been shown to contain pus upon surgical removal. There is no preventive for cat-scratch fever. Neither isolation nor quarantine are indicated.



Did you know:

That a total of 212 cases of poliomyelitis, with 196 being paralytic, and 11 deaths occurred from mid-January 1963 to early March 1963, in the Marshall Islands? Type 1 poliovirus was identified as the causative agent.

In a sharply defined susceptible group it was evident that 90% of paralytic cases were under age 7, and of these 51% were 3 years of age or younger.

The overall attack rate for the Marshallese population reached the extraordinary height of 1,230 per 100,000 or 12.3 per 1,000. The population of the atolls, exposed to the wild virus during the above period, includes only 8,865 of the total Marshallese population of 15,571 or 56%. Only 2 cases occurred among 3,000 Americans on Kwajalein Island. (1)

That 485 paralytic cases (86.5 per 100,000) with 22 deaths, due to Type 1 poliomyelitis, occurred in British Guiana from November 1962 through February 1963?

Noteworthy is the fact that 90% of cases were age 5 or younger, and greater than 80% were below age 4. (2)

That the Atlanta Journal-Constitution, Sunday Edition, 10 March 1963, contained the news story that 3 monkeys and a female gorilla in the Columbus, Ohio, Zoo may have tuberculosis? Skin tests administered have produced positive signs of infection. (3)

That a tremendous upsurge in skunk rabies accounted for the record incidence of animal rabies in Ohio in 1962? The total number of animal rabies cases was 395 which is the highest reported in that state since 1949. Of the total animal cases, 314 were in skunks, an explosive increase from the 28 skunk rabies cases the previous year. (4)

That yellow fever has never been reported from Pouso Alegre, Brazil? Between 27 December 1940 and 5 February 1941, 108 persons living in this area had been vaccinated once only with 17D yellow fever vaccine; and their antibody pattern was compared with that of 78 controls who had never been vaccinated. In the vaccinated group, the majority had neutralizing and hemagglutination-inhibition antibodies present in the serum, whereas in the unvaccinated group antibodies were all but completely absent. Heterologous antibodies to other viruses of Casal's Group B were also found, and the significance of this finding is discussed. (5)

That a recent large-scale field trial carried out in the Netherlands suggests that the routine administration of 2 ml antivaccinia gamma-globulin after smallpox vaccination will reduce the frequency of postvaccinal encephalitis by 77%? (6)

That despite continued research on filariasis, a disease affecting an estimated 200 million people, the prospect of a successful attack on the vector has improved but little in recent years? Indeed in some respects the situation may be said to have worsened, particularly in urban filariasis. (7)

That Anopheles leucosphyrus, an important vector of human malaria in Sarawak, Borneo, was shown to be infected with Plasmodium inui in Malaya by the inoculation of sporozoites into an uninfected rhesus monkey?

The mosquito was caught while biting a man, thus demonstrating that it would be possible for a monkey infection to be transmitted to man in nature. (8)

That a mysterious disease called "kuru," recently discovered in New Guinea, threatens the very existence of a number of tribes? (9)

That it is just as "normal" to live in the Arctic and Antarctic as in other parts of the world and more "normal" than in the tropics where heat severely limits the amount of physical work a man can do?

In its account of life in cold climates the World Health Organization points out that it is not hunger that kills, but very often accidents. Deaths in Alaska from external causes, including accidents, alcoholism, suicide and homicide, predominate with a rate that is 2-1/2 times that of the rest of the United States. (10)

That the Public Health Service has awarded grants for the establishment of primate research centers in Oregon, Washington, Wisconsin, Georgia, Louisiana, and Massachusetts?

The primate research center program of the Public Health Service is directed toward meeting the widely recognized need for adequate facilities for conducting research on subhuman primates. (11)

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Environmental Health Articles Desired

The National Association of Sanitarians is interested in receiving articles for publication in the Journal of Environmental Health, particularly research material in this field.

Personnel preparing articles for publication may wish to consider this journal as a medium of professional communication. Such material should be submitted in accordance with BuMed Instruction 5600.2D of 21 February 1963.

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RESERVE**SECTION**Attrition in Grade of Commander --- Here's Latest Word

In 1960, the omnibus amendments to the Reserve Officers' Personnel Act required that all officers in each grade—permanent and temporary—be included in the maximum ceiling limitations imposed by ROPA.

The ceiling established for commanders is 8400 (all categories i. e. line, medical, etc.). At the time the amendments were enacted, there were more than 12,000 commanders in an active status. Accordingly, the legislation included the authority to delay the decrease to authorized strength until the end of Fiscal Year 1964. It was expected that normal attrition—retirements, resignations, etc.—would take care of the required losses by that time. Unfortunately, however, the number of commanders has not decreased as expected. Consequently, forced attrition has become necessary. Many Reserve commanders are wondering whether they will be affected by the attrition program, as the Navy nears the deadline for getting within the numerical limit imposed by law. There are now approximately 9500 commanders (all categories) in an active status in the Naval Reserve. Based upon normal attrition estimates and promotion flow, it appears that it will be necessary to remove approximately 750 from an active status before the 30 June 1964 deadline.

Selection of those commanders who will be involuntarily removed from an active status will be made by the 1964 captain selection board. After completion of their promotion selection duties, the board members will be reconvened as a "non-continuation" board to screen commanders to be transferred to an inactive status or retired. It is anticipated that only commanders who have twice failed of selection for promotion to captain will be affected by this noncontinuation action.

Forced attrition in the senior ranks has become necessary to keep the officer grade structure within statutory limitations and still afford promotion flow and a continuing vitality in the officer corps of the Naval Reserve. Active duty officers have experienced similar forced attrition in recent years as a result of the wartime "hump," and Reserve captains have faced similar "non-continuation board" action since Fiscal Year 1961.

—From Naval Reservist, May 1963.

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American Specialty Board Certifications

The following Medical Reserve Officers (inactive) have attained specialty board certifications as indicated:

American Board of Anesthesiology:

LCdr Charles C. Richards, MC, USNR
Lt Leonard Bachman, MC, USNR
Lt Jack A. Schechter, MC, USNR
Lt Herman Turndorf, MC, USNR

American Board of Internal Medicine:

LCdr Richard J. Bartlett, MC, USNR
LCdr William D. Blackwood, MC, USNR
LCdr Jack Brook, MC, USNR
LCdr Robert C. Brown, MC, USNR
LCdr Sylvan Busch, MC, USNR
LCdr Jay A. Desjardins, MC, USNR
LCdr Virgil F. Fairbanks, MC, USNR
LCdr Victor W. Gieschen, MC, USNR
LCdr James A. Howenstine Jr., MC, USNR
LCdr Maynard E. Jacobson, MC, USNR
LCdr Harry O. Kendall, MC, USNR
LCdr Robert A. O'Reilly, MC, USNR
LCdr Ernest Evers Pund Jr., MC, USNR
LCdr Herbert B. Radack, MC, USNR
LCdr Paul P. Van Arsdell Jr., MC, USNR
LCdr Harry S. Yamahiro, MC, USNR
Lt Arthur M. Anderson, MC, USNR
Lt Victor F. Corsiglia Jr., MC, USNR
Lt Hubert M. Goldman, MC, USNR
Lt Harry E. Rice, MC, USNR

American Board of Obstetrics and Gynecology:

LCdr Edward M. Barczak, MC, USNR
LCdr William C. Scheppegrell Jr., MC, USNR
Lt James L. Fitzgerald, MC, USNR

American Board of Ophthalmology:

Lt John E. Elliff, MC, USNR

American Board of Pathology:

LCdr Billy George Brooks, MC, USNR (in Anatomic Path)
LCdr Thomas J. Fritzlen, MC, USNR (in Anat. & Clin Path)
LCdr Thomas R. Harwood, MC, USNR (in Anatomic Path)
Lt John B. Henry, MC, USNR (in Anatomic & Clin Path)
Lt William F. McCormick, MC, USNR (in Anatomic Path)

American Specialty Board Certifications (contd.)

American Board of Pediatrics:

LCdr Charles E. Hamilton, MC, USNR

LCdr Allan D. Weiner, MC, USNR

Lt Allen P. Hartman, MC, USNR

Lt George E. Thannisch, MC, USNR

American Board of Psychiatry & Neurology:

LCdr Leon R. Briggs Jr., MC, USNR (in Psychiatry)

LCdr James B. Kludt, MC, USNR (in Psychiatry)

LCdr Jerome M. Statman, MC, USNR (in Psychiatry)

Lt(jg) Huntington Mavor, MC, USNR (in Neurology)

American Board of Radiology:

LCdr Marc S. LaPayowker, MC, USNR

American Board of Surgery:

LCdr Kirk K. Barnes, MC, USNR

LCdr John M. Snelling Jr, MC, USNR

LCdr Arnold E. Botwin, MC, USNR

LCdr Ralph K. Zeck, MC, USNR

LCdr John D. Constable, MC, USNR

Lt Richard O. Kraft, MC, USNR

LCdr Frank R. Dexheimer, MC, USNR

Lt Robert A. Lonngren, MC, USNR

Lt Donald F. Percy, MC, USNR

Lt(jg) Clynn R. Ford, MC, USNR (also Thoracic Surg)

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